

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

### **IN THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

#### **Listing of Claims**

1. (Currently Amended) A transmitting apparatus for transmitting a layer structure of a directory which manages public key certificate information in a layer manner, comprising:

managing means for making certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and managing a layer structure of a directory constructed by said container entry and said leaf entry;

first detecting means for detecting a change of said layer structure of said directory which is managed by said managing means and obtaining first differential information constructed by a difference of the change of the layer structure of said directory ~~on the basis of a detection result~~;

second detecting means for detecting a change of said end entity information of said leaf entry which is managed by said managing means and obtaining second differential information constructed by a difference of the change of end entity information of said leaf entry; and

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

broadcasting means for broadcasting said first differential information detected by said first detecting means and said second differential information detected by said second detecting means, ~~for reception by a plurality of several means,~~

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry at a predetermined time interval, and

wherein said lapse information includes a method of obtaining said latest public key certificate information.

2. (Original) An apparatus according to claim 1, wherein said lapse information is a serial number of said public key certificate information.

3. (Original) An apparatus according to claim 1, wherein one of said latest public key certificate information and the information for obtaining said latest public key certificate information can be selected and stored into attributes of said container entry and/or said leaf entry.

4. (Original) An apparatus according to claim 3, wherein the information which is stored into said attributes can be changed between said latest public key certificate information and the information for obtaining said latest public key certificate information in accordance with an elapsed time from an updating event in which said difference has been detected by said detecting means.

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

5. (Currently Amended) A transmitting method of transmitting a layer structure of a directory which manages public key certificate information in a layer manner, comprising:

a managing step of making certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and managing a layer structure of a directory constructed by said container entry and said leaf entry;

a first detecting step of detecting a change of said layer structure of said directory which is managed by said managing step and obtaining first differential information constructed by a difference of the change of said layer structure of said directory ~~on the basis of a detection result~~; and

a second detecting step for detecting a change of said end entity information of said leaf entry which is managed by said managing step and obtaining second differential information constructed by a difference of the change of end entity information of said leaf entry;

a transmitting step of transmitting said first differential information detected by said first detecting step and said second differential information detected by said second detecting step,

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry at a predetermined time interval, and

wherein said lapse information includes a method of obtaining said latest public key certificate information.

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

6. (Currently Amended) A receiving apparatus for receiving a transmitted layer structure of a directory which manages public key certificate information in a layer manner, comprising:

receiving means for making transmitted certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and receiving first differential information comprising a difference of a change of a layer structure of a directory which is constructed by said container entry and said leaf entry and obtained on the basis of a detection result obtained by detecting the change of said layer structure of said directory, and receiving second differential information comprising a difference of a change of end entity information of said leaf entry;

managing means for managing said layer structure of said directory constructed on the basis of said first differential information and said second differential information received by said receiving means; and

changing means for selectively fetching said first differential information and said second differential information and changing said layer structure of said directory which is managed by said managing means,

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry and transmitted at a predetermined time interval, and

wherein said lapse information includes a method of obtaining said latest public key certificate information.

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

7. (Original) An apparatus according to claim 6, wherein said lapse information is a serial number of said public key certificate information.

8. (Original) An apparatus according to claim 6, wherein said changing means selectively fetches updating information of said container entry and/or said leaf entry corresponding to a certificate information pass for obtaining said public key certificate information.

9. (Currently Amended) A receiving method of receiving a transmitted layer structure of a directory which manages public key certificate information in a layer manner, comprising:

a receiving step of making transmitted certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and receiving first differential information comprising a difference of a change of a layer structure of a directory which is constructed by said container entry and said leaf entry and obtained on the basis of a detection result obtained by detecting the change of said layer structure of said directory, and receiving second differential information comprising a difference of a change of end entity information of said leaf entry;

a managing step of managing said layer structure of said directory constructed on the basis of said first differential information and said second differential information received by said receiving step; and

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

a changing step of selectively fetching said first differential information and said second differential information and changing said layer structure of said directory which is managed by said managing step,

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry and transmitted at a predetermined time interval, and

wherein said lapse information includes a method of obtaining said latest public key certificate information.

10. (Currently Amended) A transmitting and receiving system for transmitting a layer structure of a directory which manages public key certificate information in a layer manner and receiving the transmitted layer structure of said directory, comprising:

first managing means for making certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and managing a layer structure of a directory constructed by said container entry and said leaf entry;

first detecting means for detecting a change of said layer structure of said directory which is managed by said first managing means and obtaining first differential information constructed by a difference of the change of said layer structure of said directory on the basis of a detection result;

second detecting means for detecting a change of said end entity information of said leaf entry which is managed by said managing means and obtaining second differential

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

information constructed by a difference of the change of end entity information of said leaf entry;

transmitting means for transmitting said first differential information detected by said first detecting means and said second differential detected by said second detecting means;

receiving means for receiving said first differential information and said second differential information transmitted by said transmitting means;

second managing means for managing said layer structure of said directory constructed on the basis of said first differential information and said second differential information received by said receiving means; and

changing means for selectively fetching said first differential information and said second differential information and changing said layer structure of said directory which is managed by said second managing means,

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry at a predetermined time interval, and

wherein said lapse information includes a method of obtaining said latest public key certificate information.

11. (Original) A system according to claim 10, wherein said lapse information is a serial number of said public key certificate information.

12. (Original) A system according to claim 10, wherein one of said latest public key certificate information and the information for obtaining said latest public key certificate

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

information can be selected, stored into attributes of said container entry and/or said leaf entry, and transmitted.

13. (Original) A system according to claim 12, wherein the information which is stored into said attributes can be changed between said latest public key certificate information and the information for obtaining said latest public key certificate information in accordance with an elapsed time from an updating event in which said difference has been detected by said detecting means and transmitted.

14. (Original) A system according to claim 10, wherein said changing means selectively fetches updating information of said container entry and/or said leaf entry corresponding to a certificate information pass for obtaining said public key certificate information.

15. (Currently Amended) A transmitting and receiving method of transmitting a layer structure of a directory which manages public key certificate information in a layer manner and receiving the transmitted layer structure of said directory, comprising:

a first managing step of making certificate authority information correspond to a container entry which can store its own subordinate information, making end entity information correspond to a leaf entry which is under domination of said container entry and cannot store its own subordinate information, and managing a layer structure of a directory constructed by said container entry and said leaf entry;

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

a first detecting step of detecting a change of said layer structure of said directory which is managed by said first managing step and obtaining first differential information constructed by a difference of the change of said layer structure of said directory ~~on the basis of a detection result~~;

a second detecting step for detecting a change of said end entity information of said leaf entry which is managed by said managing means and obtaining second differential information constructed by a difference of the change of end entity information of said leaf entry;

a transmitting step of transmitting said first differential information detected by said first detecting step and said second differential information detected by second detecting step;

a receiving step of receiving said first differential information and said second differential information transmitted by said transmitting step;

a second managing step of managing said layer structure of said directory constructed on the basis of said first differential information and said second differential information received by said receiving step; and

a changing step of selectively fetching said first differential information and said second differential information and changing said layer structure of said directory which is managed by said second managing step,

wherein information which can obtain latest public key certificate information and lapse information of said latest public key certificate information are stored into said container entry and/or said leaf entry at a predetermined time interval, and

U.S. Appln. No. 09/839,872  
Reply to Office Action dated August 25, 2005

PATENT  
450100-03167

wherein said lapse information includes a method of obtaining said latest public  
key certificate information.